Table of Contents

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@unpublished{Meixedo2026ESD,
  author       = {Meixedo, João Paulo},
  title        = {Energy and Sustainable Development: Sustainable
Engineering},
  note         = {Lecture notes, Class 02, Departamento de Engenharia
Geot{\'e}cnica},
  organization = {Instituto Superior de Engenharia do Porto (ISEP)},
  address      = {Porto, Portugal},
  year         = {2026}
}
@Article{ijerph20065118,
AUTHOR = {Aziz, Ghazala and Sarwar, Suleman},
TITLE = {Empirical Evidence of Environmental Technologies, Renewable Energy
and Tourism to Minimize the Environmental Damages: Implication of Advanced
Panel Analysis},
JOURNAL = {International Journal of Environmental Research and Public
Health},
VOLUME = {20},
YEAR = {2023},
NUMBER = {6},
ARTICLE-NUMBER = {5118},
URL = {https://www.mdpi.com/1660-4601/20/6/5118},
PubMedID = {36982028},
ISSN = {1660-4601},
ABSTRACT = {The motivation behind this research is to investigate the
determinants of the ecological footprint in MENA countries and find
appropriate solutions. We updated the STIRPAT model and applied
sophisticated panel techniques to data from 1996 to 2020. According to the
findings, economic expansion along with urbanization and tourism is to blame
for these countries' huge environmental footprints. In addition, when it
comes to environmental degradation remedies, environmental innovation and
the use of renewable energy play an important role in minimizing these
environmental externalities. The results of post Saudi Vison 2030 analysis
confirmed the significance of urban population and renewable energy in
minimizing the environmental footprint. In light of the findings, it is
advised that policymakers should revise the legislative framework to attract
not only private sector investment, but also foreign investment to utilize
the full potential of renewable energy generation.},
DOI = {10.3390/ijerph20065118}
}
@article{Bowman2025,
author = {Bowman, David M. J. S. and Balch, Jennifer and Artaxo, Paulo and
Bond, William J. and Cochrane, Mark A. and D'Antonio, Carla M. and DeFries,
Ruth and Johnston, Fay H. and Keeley, Jon E. and Krawchuk, Meg A. and Kull,
Christian A. and Mack, Michelle and Moritz, Max A. and Pyne, Stephen and
Roos, Christopher I. and Scott, Andrew C. and Sodhi, Navjot S. and Swetnam,
Thomas W.},
title = {The human dimension of fire regimes on Earth},
journal = {Journal of Biogeography},
volume = {38},
number = {12},
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pages = {2223-2236},
keywords = {Fire and culture, fire management, fire regime, global
environmental change, landscape fire, palaeoecology, prehistoric human
impacts, pyrogeography},
doi = {https://doi.org/10.1111/j.1365-2699.2011.02595.x},
url =
{https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2699.2011.02595.x},
eprint =
{https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1365-2699.2011.02595.x},
abstract = {Abstract Humans and their ancestors are unique in being a fire-
making species, but ‘natural’ (i.e. independent of humans) fires have an
ancient, geological history on Earth. Natural fires have influenced
biological evolution and global biogeochemical cycles, making fire integral
to the functioning of some biomes. Globally, debate rages about the impact
on ecosystems of prehistoric human-set fires, with views ranging from
catastrophic to negligible. Understanding of the diversity of human fire
regimes on Earth in the past, present and future remains rudimentary. It
remains uncertain how humans have caused a departure from ‘natural’
background levels that vary with climate change. Available evidence shows
that modern humans can increase or decrease background levels of natural
fire activity by clearing forests, promoting grazing, dispersing plants,
altering ignition patterns and actively suppressing fires, thereby causing
substantial ecosystem changes and loss of biodiversity. Some of these
contemporary fire regimes cause substantial economic disruptions owing to
the destruction of infrastructure, degradation of ecosystem services, loss
of life, and smoke-related health effects. These episodic disasters help
frame negative public attitudes towards landscape fires, despite the need
for burning to sustain some ecosystems. Greenhouse gas-induced warming and
changes in the hydrological cycle may increase the occurrence of large,
severe fires, with potentially significant feedbacks to the Earth system.
Improved understanding of human fire regimes demands: (1) better data on
past and current human influences on fire regimes to enable global
comparative analyses, (2) a greater understanding of different cultural
traditions of landscape burning and their positive and negative social,
economic and ecological effects, and (3) more realistic representations of
anthropogenic fire in global vegetation and climate change models. We
provide an historical framework to promote understanding of the development
and diversification of fire regimes, covering the pre-human period, human
domestication of fire, and the subsequent transition from subsistence
agriculture to industrial economies. All of these phases still occur on
Earth, providing opportunities for comparative research.},
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  author = {Rosenboom, Jan-Georg and Seeger, Martina and others},
  title = {The life cycle assessment for polylactic acid (PLA) to make it a
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  journal = {Nature Communications},
  volume = {12},
  year = {2021},
  doi = {10.1038/s41467-021-26121-z},
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  note = {Confirms PLA carbon footprint reduction and industrial composting
requirements.}
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@article{PLA_Degradation_2024,
  author = {Frontiers in Materials Editorial},
  title = {Hydrolytic Degradation and Mechanical Stability of Biopolymers in
Public Infrastructure},
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  note = {Discusses the 58°C threshold for PLA breakdown.}
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@article{PCB_Metal_Recovery_2024,
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  title = {Sustainable Process to Recover Metals from Waste Printed Circuit
Boards (PCBs)},
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  volume = {16},
  number = {2},
  year = {2024},
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  author = {Buchert, Matthias and others},
  title = {The Potential and Limitations of Critical Raw Material Recycling:
The Case of LED Lamps},
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  volume = {10},
  number = {11},
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streams.}
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  author = {TiRapid Materials Laboratory},
  title = {Comparative Study of PC/ABS vs. PLA in High-Stress Public Utility
Environments},
  institution = {TiRapid Engineering Group},
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60°C.}
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McIntosh, J. and Parkinson, K.},
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communities: An exploratory study of coal mining in the {M}uswellbrook area
of {N}ew {S}outh {W}ales},
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Water in the Minerals Industry},
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M.P. and Hultink, Erik Jan},
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  title     = {The World's Appetite for Light: Empirical Data and Trends
Spanning Three Centuries and Six Continents},
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  title     = {Effect of Chinese Policies on Rare Earth Supply Chain Resilience},
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  year      = {2019},
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  publisher = {Elsevier}
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@inproceedings{kinetic-particles,
author = {Lafontaine, Mickael and Cloarec-Michaud, Julie and Riou, Kevin and Huang, Yujie and Dong, Kaiwen and Le Callet, Patrick},
title = {Kinetic particles : from human pose estimation to an immersive and interactive piece of art questionning thought-movement relationships.},
year = {2023},
isbn = {9798400700286},
publisher = {Association for Computing Machinery},
address = {New York, NY, USA},
url = {https://doi.org/10.1145/3573381.3597228},
doi = {10.1145/3573381.3597228},
abstract = {Digital tools offer extensive solutions to explore novel interactive-art paradigms, by relying on various sensors to create installations and performances where the human activity can be captured, analysed and used to generate visual and sound universes in real-time. Deep learning approaches, including human detection and human pose estimation, constitute ideal human-art interaction mediums, as they allow automatic human gesture analysis, which can be directly used to produce the interactive piece of art. In this context, this paper presents an interactive work of art that explores the relationship between thought and movement by combining dance, philosophy, numerical arts, and deep learning. We present a novel system that combines a multi-camera setup to capture human movement, state-of-the-art human pose estimation models to automatically analyze this movement, and an immersive 180° projection system that projects a dynamic textual content that intuitively responds to the users' behaviors. The demonstration being proposed consists of two parts. Firstly, a professional dancer will utilize the proposed setup to deliver a conference-show. Secondly, the audience will be given the opportunity to experiment and discover the potential of the proposed setup, which has been transformed into an interactive installation. This allows multiple spectators to engage simultaneously with clusters of words and letters extracted from the conference text.
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@online{jounila2019wsp,
  author = {Jounila, Risto},
  title = {What if public transport could alleviate loneliness?},
  year = {2019},
  month = {oct},
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  url = {https://www.wsp.com/en-us/insights/public-transport-loneliness},
  organization = {WSP},
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}
@article{Hammoud2021,
  author = {Hammoud, Ryan and Tognin, Stefania and Bakolis, Ioannis and
Ivanova, Daniela and Fitzpatrick, Naomi and Burgess, Lucie and Smythe,
Michael and Gibbons, Johanna and Davidson, Neil and Mechelli, Andrea},
  title = {Lonely in a crowd: investigating the association between
overcrowding and loneliness using smartphone technologies},
  journal = {Scientific Reports},
  year = {2021},
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  doi = {10.1038/s41598-021-03398-2},
  url = {https://doi.org/10.1038/s41598-021-03398-2},
  issn = {2045-2322},
  abstract = {Loneliness is a major public health concern with links to
social and environmental factors. Previous studies have typically
investigated loneliness as a stable emotional state using retrospective
cross-sectional designs. Yet people experience different levels of
loneliness throughout the day depending on their surrounding environment. In
the present study, we investigated the associations between loneliness and
social and environmental factors (i.e. overcrowding, population density,
social inclusivity and contact with nature) in real-time. Ecological
momentary assessment data was collected from participants using the Urban
Mind smartphone application. Data from 756 participants who completed 16,602
assessments between April 2018 and March 2020 were used in order to
investigate associations between momentary feeling of loneliness, the social
environment (i.e. overcrowding, social inclusivity, population density) and
the built environment (i.e. contact with nature) using multilevel modelling.
Increased overcrowding and population density were associated with higher
levels of loneliness; in contrast, social inclusivity and contact with
nature were associated with lower levels of loneliness. These associations
remained significant after adjusting for age, gender, ethnicity, education
and occupation. The positive association between social inclusivity and
lower levels of loneliness was more pronounced when participants were in
contact with nature, indicating an interaction between the social and built
environment on loneliness. The feeling of loneliness changes in relation to
both social and environmental factors. Our findings have potential
implications for public health strategies and interventions aimed at
reducing the burden of loneliness on society. Specific measures, which would
increase social inclusion and contact with nature while reducing
overcrowding, should be implemented, especially in densely populated cities.
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author="Hu, Jun
and Funk, Mathias
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title="Designing Interactive Public Art Installations: New Material
Therefore New Challenges",
booktitle="Entertainment Computing -- ICEC 2014",
year="2014",
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address="Berlin, Heidelberg",
pages="199--206",
abstract="The new materials in public art installations give the birth to
interactivity and participation, which in turn, introduces new challenges,
not only in the creative design process, but also in how to involve the
participants in this process and in evaluating the targeted experience such
as such as social connectedness and inclusion. Six design cases are
presented, as examples for interactive and participatory forms of these
installations. The design techniques and the user experience evaluation
methods overlap in these cases and many of these techniques and methods have
been found to be useful in our practice.",
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  publisher = {ACM}
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  number={},
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Fi;oscilloscope},
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development;Laboratories;Art},
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  note         = {Unpublished lecture notes}
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@Article{polym12122905,
AUTHOR = {Dzedzickis, Andrius and Sutinys, Ernestas and Bucinskas, Vytautas
and Samukaite-Bubniene, Urte and Jakstys, Baltramiejus and Ramanavicius,
Arunas and Morkvenaite-Vilkonciene, Inga},
TITLE = {Polyethylene-Carbon Composite (Velostat®) Based Tactile Sensor},
JOURNAL = {Polymers},
VOLUME = {12},
YEAR = {2020},
NUMBER = {12},
ARTICLE-NUMBER = {2905},
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URL = {https://www.mdpi.com/2073-4360/12/12/2905},
PubMedID = {33287414},
ISSN = {2073-4360},
ABSTRACT = {The progress observed in ‘soft robotics’ brought some promising research in flexible tactile, pressure and force sensors, which can be based on polymeric composite materials. Therefore, in this paper, we intend to evaluate the characteristics of a force-sensitive material—polyethylene-carbon composite (Velostat®) by implementing this material into the design of the flexible tactile sensor. We have explored several possibilities to measure the electrical signal and assessed the mechanical and time-dependent properties of this tactile sensor. The response of the sensor was evaluated by performing tests in static, long-term load and cyclic modes. Experimental results of loading cycle measurements revealed the hysteresis and nonlinear properties of the sensor. The transverse resolution of the sensor was defined by measuring the response of the sensor at different distances from the loaded point. Obtained dependencies of the sensor’s sensitivity, hysteresis, response time, transversal resolution and deformation on applied compressive force promise a practical possibility to use the polyethylene-carbon composite as a sensitive material for sensors with a single electrode pair or its matrix. The results received from experimental research have defined the area of the possible implementation of the sensor based on a composite material—Velostat®.},
DOI = {10.3390/polym12122905}
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  isbn={9781859840511},
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Dai, Y. and Neisiany, R. E. and Foroughi, F. and Wu, M. and Das, O. and
Ramakrishna, S.},
  journal = {Polymers},
  volume = {13},
  number = {11},
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